MISCELLANEOUS.

On the Heart, the Digestive Tube, and the Generative Organs of Amarœcium torquatum. By M. C. Maurice.

On examining a transverse section made about the middle of the postabdomen of an *Amarœcium* we find three entirely empty cavities. One of them, which is elongated and median, occupies the whole width of the postabdomen and is situated in the horizontal plane of the Ascidian; of the other two, of irregular form, one is dorsal, the other ventral. These cavities are the sections of three tubes which run longitudinally in the postabdomen; they have been observed in other species of Ascidia by MM. Seeliger, von Drasche, and Della Valle, although these writers were unable to ascertain their precise signification. The last two cavities were regarded by M. Della Valle as processes (peritoneal sacs) of the peribranchial cavity. I have been able, in *Amarœcium torquatum*, to ascertain the anatomical arrangement of these different organs.

At the posterior extremity of the postabdomen the heart is situated. The cardiac cavity, and with it the pericardiac cavity, are incurved in the form of a crescent, one of the horns of which is produced into the dorsal and the other into the ventral half of the postabdomen. The pericardiac cavity ascends very far on each side; each of its branches terminates cæcally at a level which varies in different individuals, but generally at the level of the ovary. These two branches of the pericardiac cavity are the two peritoneal sacs of M. Della Valle mentioned above.

As regards the median tube of the postabdomen, it terminates cæcally posteriorly, after having bifurcated near its extremity into two branches, which nearly reach the end of the postabdomen. If, on the other hand, we trace this tube forward, that is to say towards the viscera, it is seen to subdivide at the level of the stomach into two tubes, which apply their anterior extremities against the bottom of the branchial cavity on each side of the posterior raphe, between the extremity of the endostyle and the entrance of the œsophagus. These anatomical arrangements show that we have here to do with the organ which MM. Van Beneden and Julin have called the *epicardium*, an organ which is a dependency of the branchial sac. In adult individuals I have been unable to demonstrate the actual orifices of the epicardiac tubes into the branchial cavity; but these orifices are evidently closed by secondary obliteration in the course of the development of the animal, for I have found the communications between these tubes and the branchial cavity very distinct in an allied species, *A. proliferum*, and in the young larvæ of the present species, *A. torquatum*.

Thus, of the three cavities which we find in a transverse section of the postabdomen at the middle, the median one is a dependency of the branchial cavity (epicardium) and the other two processes of the pericardiac cavity.

The cardiac cavity is open, not only at its two extremities, as in

the simple and social Ascidia, but throughout its whole length. The cardiac fissure, in fact, is situated upon the convex surface of the crescent formed by the heart; it therefore, as it were, turns its back to the epicardiac sac, which can thus no longer, as in *Clavelina*, be applied to it to close it.

The cells of the cardiac epithelium present a row of muscular fibrillæ towards the cavity of the heart; their nuclei, on the contrary, are situated towards the pericardiac cavity. Neither the vessels nor the heart present any endothelium.

Digestive Tube.—All along the terminal intestine we can very easily see the composite tubular gland which Huxley was the first to indicate in all the groups of the Tunicata, but the existence of which has lately been denied, even in the simple Ascidia. This gland is formed by a quantity of small tubes terminating cæcally, which pour their secretion into the stomach by a common duct.

The anus presents a wide process, which projects into the interior of the cloacal cavity. It is further surrounded by several transverse muscular sphincters.

The cloacal cavity elongates considerably during reproduction, to become transformed into a cavity of incubation in which the embryos are developed. The oviduct, which opened into the cloaca by the side of the deferent canal, takes part in the formation of the incubatory chamber; while the upper lip of its orifice remains applied against the deferent canal, its actual aperture is carried to the very bottom of the incubatory cavity. The cloacal aperture is remarkable for a series of tonguelets or plates, exclusively belonging to the epithelium.

Generative Organs.—These are situated in the postabdomen, on the same side of the epicardiac lamina, in the dorsal face of the animal. The ovary is placed in front of the testis. There is a very distinct oviduct, applied throughout its whole length against the outer surface of the deferent duct; this oviduct is flattened and bounded by an unciliated epithelium, while the deferent duct is rounded and bounded by vibratile epithelium.

The ovary presents a cavity which is continued directly into that of the oviduct; this cavity is bounded by a flat epithelium, which, at certain points, becomes a typical germinative epithelium. It is at the expense of this germinative epithelium that the ovarian follicles are developed; these are never detached from the epithelium from which they originated. The mature ova fall into the ovarian cavity, to be expelled through the oviduct.

The ovary and the testis are never in function at the same time. —*Comptes Rendus*, September 13, 1886, p. 504.

A new Form of Opalina. By M. N. Warpachowsky.

The author describes a new form of parasite which he has met with abundantly in the body-cavity of young earthworms. The animal shows the general characters of *Opalina* and somewhat resembles *Opalina filum*, Clap., in external form; but it is distinguished from all other species of the genus known to the author by